ADHD AND ANXIETY AND DEPRESSION

AN OVERVIEW

A/Professor Alasdair Vance
Head, Academic Child Psychiatry
Department of Paediatrics
University of Melbourne

• Telephone: 9345 4666
• Facsimile: 9345 6002
• Email: advance@unimelb.edu.au
• Website: www.rch.org.au/acpu
Outline of Presentation

- Definition of ADHD, anxiety and depressive disorders
- The conceptual problem of comorbidity
- The clinical problem of comorbidity
- Future directions
"Well, well, King ... looks like the new neighbors have brought a friend for you, too."
"Hello, Emily. This is Gladys Murphy up the street. Fine, thanks . . . Say, could you go to your window and describe what's in my front yard?"
"All right, Billy, you just go right ahead! ... I've warned you enough times about playing under the anvil tree!"
Attention Deficit Hyperactivity Disorder (ADHD)

DSM-IV CRITERIA

-six or more symptoms, at least six months, maladaptive/inconsistent with developmental level

-inattention dimension and/or hyperactivity-impulsivity dimension

-evident at least two settings

-onset before seven years of age

-impairment social, academic, occupational functioning

-symptoms not due to a PDD, Psychotic, Mood, or Anxiety Disorder

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Definition (DSM-IV)

Major depressive disorder – one or more major depressive episode(s) characterized by the following:

* period of two weeks or more
* depressed mood predominant and/or
* loss of interest or pleasure
* 3 or 4 or more of the following;
  * feelings of worthlessness or excessive or inappropriate guilt,
  * >5% weight change in a given month, in/hyper somnia, psychomotor agitation/retardation, anergia (fatigue),
  * decreased concentration or ability to think or decisiveness, recurrent thoughts of death, suicidal ideation, suicide plan or suicide attempt

* symptoms cause impairment in interpersonal, social, academic, occupational functioning

* not due to a substance, medical condition or bereavement
Definition (DSM-IV)

Dysthymic disorder is characterized by the following:
- 2 years or more (most of the day, for more days than not),
- <2 months absence in a given year
- depressed mood predominant
- 2 or more of the following:
  - feelings of hopelessness, low self-esteem
  - appetite change, in/hyper somnia, anergia (fatigue),
  - decreased concentration or decisiveness
- no major depressive episode evident in first year of the symptoms
- symptoms cause impairment in interpersonal, social, academic, occupational functioning
- not due to a substance, medical condition or bereavement
Definition (DSM-IV)

Anxiety disorders are characterized by the following:

Generalized Anxiety Disorder: > 6 months anxiety/worries
Specific Phobia: specific fear stimulus
Social Phobia: interpersonal sensitivity
Obsessive compulsive disorder: presence of obsessions/compulsions
Panic disorder: panic attacks with characteristic cognitions

Symptoms cause impairment in interpersonal, social, academic, occupational functioning
Not due to a substance or medical condition
Types of ADHD

- predominantly inattentive type (primarily)
- combined type
- predominantly hyperactive-impulsive type
- all subtypes average prevalence
  4% (9 years) 0.8% (20 years) (decrease 50%/5 years)

- Controversy continues…..diagnostic criteria and informants used
Comorbidity of ADHD

-alcohol/substance abuse/dependence disorders

-oppositional-defiant through to conduct disorders

-anxiety and depressive symptoms through to disorders
Comorbidity of ADHD (continued)

-males: increased rates of oppositional-defiant through to conduct disorders

-females: increased rates of anxiety and depressive symptoms through to disorders

-oppositional-defiant disorder increases risk of anxiety and depressive symptoms through to disorders
Comorbidity of ADHD (continued)

- psychotic disorders

  primarily disorganized schizophrenia/ residual schizophrenia

  prominent thought blocking, formal thought disorder, confusion, personality disintegration, social and occupational impairment
The conceptual problem of comorbidity

- comorbid disorders are separate disorders

- comorbid disorders are secondary disorders

ADHD → anxiety disorders / depressive disorders

ADHD ← anxiety disorders / depressive disorders

- comorbid disorders share common antecedent

ADHD → anxiety disorders / depressive disorders

working memory deficits
The conceptual problem of comorbidity

- comorbid disorders are separate disorders

- overwhelming evidence of a greater than chance association of ADHD and anxiety disorders / depressive disorders
The conceptual problem of comorbidity

- comorbid disorders are secondary disorders

ADHD → anxiety disorders / depressive disorders

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FIGURE 8.1 The prefrontal, parietal, and temporal association cortices form interconnected networks that play complementary roles in attentional processing.
Figure 16.1. Central organisation of the frontal–subcortical circuits.

Figure 16.2. Organisation of the frontal–subcortical circuits (see also Cummings, 1993). (NB: indirect circuits of the substantia nigra and subthalamic nucleus are not shown.)
The conceptual problem of comorbidity

- comorbid disorders are secondary disorders

ADHD ← anxiety disorders / depressive disorders
Behavioural symptom level

Prefrontal cortex

function

Prefrontal
cortex
dysfunction

Anxiety – low/high

Depression - low

Behavioural symptom level
The conceptual problem of comorbidity

- comorbid disorders share common antecedent

ADHD → anxiety disorders / depressive disorders

working memory deficits
Anxiety

ADHD-CT and anxiety

ADHD-CT
R^2 = 0.8674

R^2 = 0.9867

Age (months)

BSE - total

Anxiety
ADHD-CT and anxiety
ADHD-CT
Dysthymic disorder
ADHD-CT and dysthymic disorder
ADHD-CT
The graph shows the relationship between age (in months) and BSE-total for different conditions:

- **Dysthymic disorder** (blue line)
- **ADHD-CT and dysthymic disorder** (pink line)
- **ADHD-CT** (yellow line)

The coefficient of determination ($R^2$) is 0.8055. The equation for the line of best fit for dysthymic disorder is given as $R^2 = 0.8055$. The data points are scattered along the lines, indicating variability within each condition.
The conceptual problem of comorbidity

- comorbid disorders share common antecedent

ADHD  anxiety disorders / depressive disorders

working memory deficits
The clinical problem of comorbidity

-Summary to date:
  impairment governs referral
  comorbidity is common
  relatively specific and common risk factors emerging
  brain systems studied affected by ‘biological’ and
  ‘environmental’ factors
Developmental psychopathology

-assessment and treatment involves [1] identifying biological, psychological, social, cultural and developmental risk and resilience factors and their relative importance in a given individual and [2] biological and psychological treatments used alone or in conjunction to achieve specific goals informed by the relative priorities of these risk and resilience factors

-monitoring of treatment resides primarily with the clinician in association with the individual in the treatment process
-clear biological risk factors or resilience factors identified
"Rub his belly, Ernie! Rub his belly!"
Key targets of psychological and biological treatment

Executive functioning

Response inhibition: motor and cognition
optimise response speed and accuracy

Working memory: verbal and visuospatial
optimise span and strategy
Key targets of psychological and biological treatment

Mood dysregulation: decrease irritability
                 increase emotional salience

Arousal dysregulation: optimise physiological arousal
                     optimise habituation

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Useful medication approaches

Response inhibition:

motor and cognition  stimulant medication -linear dose response
speed and accuracy  clonidine higher dose

Working memory:

span  stimulant medication -inverted parabolic response
strategy  stimulant medication -linear dose response clonidine higher dose

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## Useful medication approaches

### Mood dysregulation:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Medication Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>irritability</td>
<td>stimulant medication</td>
</tr>
<tr>
<td></td>
<td>SSRI</td>
</tr>
<tr>
<td></td>
<td>TCA</td>
</tr>
<tr>
<td></td>
<td>antipsychotic medication</td>
</tr>
<tr>
<td>emotional salience</td>
<td>stimulant medication</td>
</tr>
<tr>
<td></td>
<td>SSRI?</td>
</tr>
<tr>
<td></td>
<td>TCA?</td>
</tr>
</tbody>
</table>

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Useful medication approaches

Arousal regulation:

<table>
<thead>
<tr>
<th>physiological arousal</th>
<th>clonidine</th>
<th>benzodiazepines</th>
<th>TCA</th>
<th>antipsychotic medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>habituation response</td>
<td>clonidine</td>
<td>benzodiazepines</td>
<td>TCA?</td>
<td>antipsychotic medication?</td>
</tr>
</tbody>
</table>

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Future directions

- developmental stage dependent / independent risk and resilience factors determined

- more specific psychological and medication treatments determined

- more specific monitoring of these treatments determined

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The traditional single viewpoint has been abandoned: perspective has been fractured. The multiple views provide too much information! It's impossible to make Calvin quickly tries to eliminate all but one perspective.

Oh no! Everything has suddenly turned Neo-Cubist! It all started when Calvin engaged his dad in a minor debate. Soon Calvin could see both sides of the issue. Then poor Calvin began to see both sides of everything.

It works! The world falls into a recognizable order. You're still wrong, Dad.
Doesn’t it seem like everybody just shouts at each other nowadays?

I think it’s because conflict is drama, drama is entertaining and entertainment is marketable.

Finding consensus and common ground is dull! Nobody wants to watch a civilized discussion that acknowledges ambiguity and complexity. We want to see fireworks!

We want the sense of solidarity and identity that comes from having our interests narrowed and exploited by like-minded zealots.

Talk show hosts, political candidates, news programs, special interest groups... they all become successful by reducing debates to the level of shouted rage. Nothing gets solved, but we’re all entertained.

Hmm, you may be right.

What a boring day this turned out to be!